Optimizing the Galileo Space Communication Link

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Abstract

The **Galileo** *mission was originally designed to investigate Jupiter and its moons utilizing a high rate, X-band communication downlink with a maximum rate of 134,4 Kbits/s. However, following the failure of the deployment of its t ligh Gain Antenna (\{GA), a completely new communication link design was established that is based* **on Galileo's** *S-band, Low Gain Antenna (L GA). The new link relies on local and inter-continental arraying* **of antennas, a (14, 7/4)** *convolutional code, a (255,M) variable-redundancy Reed-Solomon code, decoding feedback,* **and** *techniques to re-process recorded* **data** *to greatly reduce data losses during signal acquisition.* ***I-he combination of these techniques will*** *enable return of significant science dafa from the mission.*